WHAT IS CLAIMED IS:

1. A method of manufacturing a Group III nitride substrate, the method comprising:

(i) forming a Group III nitride layer including gaps, on a substrate;

(ii) bringing a surface of the Group III nitride layer into contact with a melt containing alkali metal and at least one Group III element selected from gallium, aluminum, and indium, in an atmosphere containing nitrogen, to make the at least one Group III element and the nitrogen react with each other to grow Group III nitride crystals on the Group III nitride layer; and

(iii) separating a part including the substrate and a part including the Group III nitride crystals from each other in vicinities of the gaps.

2. The method of manufacturing a Group III nitride substrate according to claim 1, wherein the at least one Group III element is gallium, and the Group III nitride crystals are GaN crystals.

3. The method of manufacturing a Group III nitride substrate according to claim 1, wherein the atmosphere containing nitrogen is a pressurized atmosphere.

4. The method of manufacturing a Group III nitride substrate according to claim 1, wherein in the process (iii), separation is carried out using stress generated by a difference in coefficient of linear expansion between the substrate and the Group III nitride crystals.

5. The method of manufacturing a Group III nitride substrate according to claim 1, wherein the process (i) comprises:

(i-1) forming a first semiconductor layer expressed by a composition formula of $Al_uGa_vIn_{1-u-v}N$ (wherein $0 \leq u \leq 1$ and $0 \leq v \leq 1$), on the substrate;

(i-2) forming convex portions by partially removing the first semiconductor layer; and

(i-3) forming the Group III nitride layer having gaps in its portions other than the convex portions by growing a second semiconductor layer from upper surfaces of the convex portions of the first semiconductor layer, the second semiconductor layer being expressed by a composition formula of $Al_xGa_yIn_{1-x-y}N$ (wherein $0 \leq x \leq 1$ and $0 \leq y \leq 1$),

wherein in the process (iii), the first semiconductor layer and the second semiconductor layer are separated from each other at the upper surfaces of the convex portions.

6. The method of manufacturing a Group III nitride substrate according to claim 5, wherein the upper surfaces are C-planes.

7. The method of manufacturing a Group III nitride substrate according to claim 5, wherein in the process (i-2), the convex portions are formed in stripes.

8. The method of manufacturing a Group III nitride substrate according to claim 5, wherein in the process (i-2), concave portions that are portions other than the upper surfaces of the convex portions are covered with a mask film.

9. The method of manufacturing a Group III nitride substrate according to claim 8, wherein the mask film contains at least one selected from a group consisting of silicon nitride, oxide silicon, nitride oxide silicon, aluminum oxide, aluminum nitride oxide, titanium oxide, zirconium oxide, and niobium oxide.

10. The method of manufacturing a Group III nitride substrate according to claim 8, wherein the mask film is made of high melting metal or a high melting metallized material.

11. The method of manufacturing a Group III nitride substrate according to claim 8, wherein the mask film contains at least one selected from a group consisting of tungsten, molybdenum, niobium, tungsten silicide, molybdenum silicide, and niobium silicide.

12. A method of manufacturing a Group III nitride substrate, comprising:

(I) forming convex portions by processing a surface of a substrate;

(II) growing a Group III nitride layer from upper surfaces of the convex portions to form a seed crystal substrate having gaps formed between the substrate and the Group III nitride layer;

(III) bringing a surface of the Group III nitride layer into contact with a melt containing alkali metal and at least one Group III element selected from gallium, aluminum, and indium, in a pressurized atmosphere containing nitrogen, to make the at least one Group III element and the nitrogen react with each other to grow Group III nitride crystals on the Group III nitride layer; and

(IV) separating a part including the substrate and a part including the Group III nitride crystals from each other in vicinities of the gaps.

13. The method of manufacturing a Group III nitride substrate according to claim 1, wherein the substrate is a sapphire substrate.

14. The method of manufacturing a Group III nitride substrate according to claim 1, wherein the alkali metal is at least one selected from sodium, lithium, and potassium.

15. The method of manufacturing a Group III nitride substrate according to claim 1, wherein the melt further contains alkaline-earth metal.

16. The method of manufacturing a Group III nitride substrate according to claim 1, wherein the process (i) comprises:

(i-a) forming a first semiconductor layer expressed by a composition formula of $Al_uGa_vIn_{1-u-v}N$ (wherein $0 \leq u \leq 1$ and $0 \leq v \leq 1$), on the substrate; and

(i-b) forming concave portions to be gaps by partially removing the first semiconductor layer to expose portions of the substrate and thereby forming remaining portions into convex portions,

wherein in the process (ii), Group III nitride crystals are grown on surfaces of the convex portions formed in the process (i-b).

17. The method of manufacturing a Group III nitride substrate according to claim 1, wherein the process (i) comprises:

(i-c) forming a mask film patterned on the substrate; and

(i-d) forming a first semiconductor layer with a convex shape on each of portions of the substrate that are not covered with the mask film, to allow concave portions to be gaps, the first semiconductor layer being expressed

by a composition formula of $Al_uGa_vIn_{1-u-v}N$ (wherein $0 \leq u \leq 1$ and $0 \leq v \leq 1$), and the concave portions being portions where the first semiconductor layer with the convex shape has not been formed,

wherein in the process (ii), Group III nitride crystals are grown on a surface of the first semiconductor layer formed in the process (i-d).

18. The method of manufacturing a Group III nitride substrate according to claim 1, wherein in the process (i), the Group III nitride layer including gaps includes a semiconductor layer expressed by a composition formula of $Al_xGa_yIn_{1-x-y}N$ (wherein $0 \leq x \leq 1$ and $0 \leq y \leq 1$), and after forming the semiconductor layer, the gaps are formed in the semiconductor layer or at a surface of the semiconductor layer through a temperature-programmed heat treatment carried out in an atmosphere of a mixture of ammonia and nitrogen.

19. The method of manufacturing a Group III nitride substrate according to claim 18, wherein the Group III nitride layer including gaps is a semiconductor layer expressed by a composition formula of $Ga_xIn_{1-x}N$ (wherein $0 \leq x \leq 1$).

20. The method of manufacturing a Group III nitride substrate according to claim 18, wherein the temperature-programmed heat treatment is carried out at a programming rate of 50 to 100°C/min.

21. The method of manufacturing a Group III nitride substrate according to claim 1, wherein a cycle of the gaps is at least 30 μm.

22. The method of manufacturing a Group III nitride substrate according to claim 1, wherein a cycle of the gaps is at least 50 μm.

23. The method of manufacturing a Group III nitride substrate according to claim 1, wherein a cycle of the gaps is at least 100 μm.

24. A Group III nitride substrate manufactured by a manufacturing method according to claim 1.

25. The Group III nitride substrate according to claim 24, wherein a

cycle of dense dislocation areas is at least 30 μm.

26. The Group III nitride substrate according to claim 24, wherein a cycle of dense dislocation areas is at least 50 μm.

27. The Group III nitride substrate according to claim 24, wherein a cycle of dense dislocation areas is at least 100 μm.

28. A semiconductor device comprising:

a substrate; and

a semiconductor element formed on the substrate,

wherein the substrate is a Group III nitride substrate manufactured by a manufacturing method according to claim 1.

29. The semiconductor device according to claim 28, wherein the semiconductor element is a laser diode or a light emitting diode.

30. A method of manufacturing a Group III nitride substrate, comprising:

(i) forming a Group III nitride layer including gaps, on a substrate;

(ii) sublimating a raw material of Group III nitride crystals, cooling it on the Group III nitride layer in an atmosphere containing nitrogen or ammonia to recrystallize it to obtain the Group III nitride crystals;

(iii) separating a portion including the substrate and a portion including the Group III nitride crystals from each other in vicinities of the gaps.

31. The method of manufacturing a Group III nitride substrate according to claim 30, wherein the process (ii) is carried out at 1 atm or higher.